

The Late Pleistocene Mammal assemblage from Ingarano (Apulia, Southern Italy)

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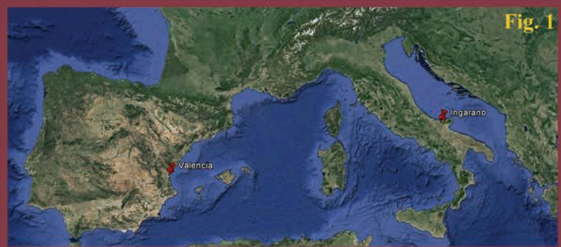


Fig. 1

The site of Ingarano located in Gargano Peninsula (Apulia, Southern Italy) (Fig. 1). The deposit includes five different layers (A, B, C, D and E, Fig. 2) and the complete sequence, approximately 12 m thick, represents the filling of a karst cavity developed in the Late Cretaceous "Calcari di Sannicandro" Formation (Capasso Barbato et al., 1992; Petronio et al., 1996; Bedetti and Pavia, 2007). The deposition of the sequence, according to radiometric data with U/Th method, took place in the time span $40 - 35 \pm 2$ ky.

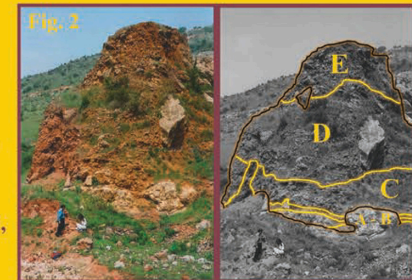


Fig. 2

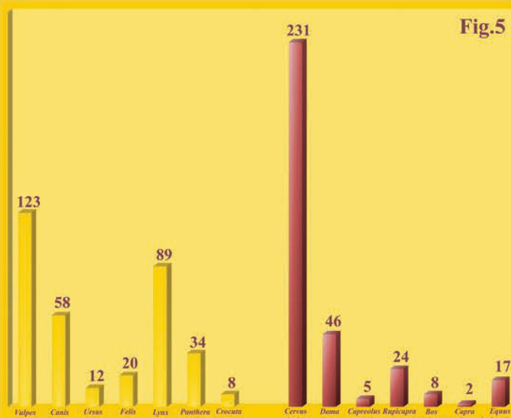


Fig. 5

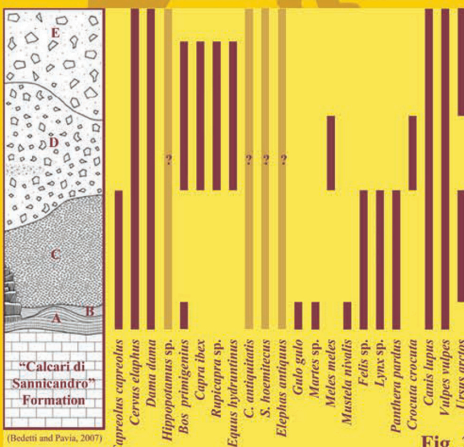


Fig. 3

The best represented taxon is the red deer (*Cervus elaphus*) that, together with the fallow deer (*Dama dama*) occurs in all stratigraphic layers. From the upper complex *Capra ibex* has been documented.

Carnivores are very abundant and diversified (Fig. 5). Canids (*Vulpes vulpes* and *Canis lupus*), occur in every layers of the sequence. The fossil sample of the red fox is outstanding with 123 bones remains. Therefore it can be considered as one of the richest sites for the Late Pleistocene of Europe for this taxon. Felidae are also well represented and lynx in particular (*Lynx sp.*) is documented only in the lower complex by a huge sample. Felidae (*Lynx sp.*, *Panthera pardus* and *Felis sp.*) are present, however, only in the basal complex. From the lower complex a complete skull of *Ursus arctos* as been found.

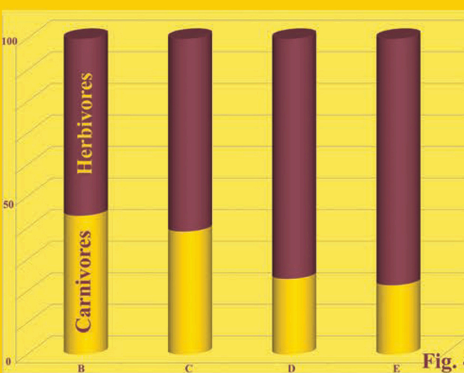
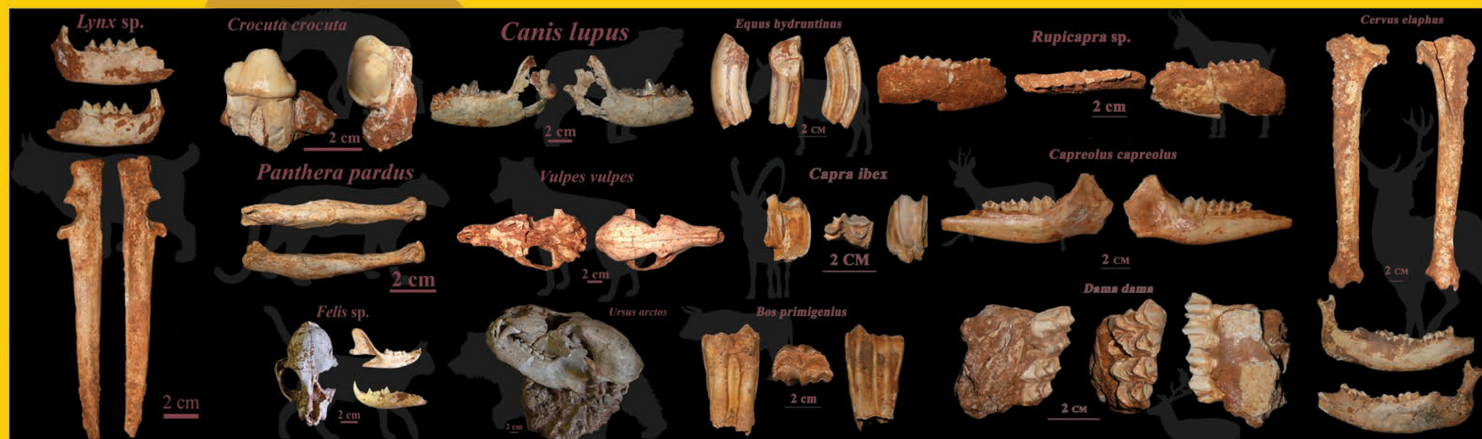


Fig. 4

The origin layer B in due to the decomposition of guano deposit produced by a colony of birds that inhabited the area. The layer C was probably formed with a single depositional event, while layers D and E shows the occurrence of several minor depositional events, probably originated from the seasonal floods. From the sequence (B to E layers) more than 900 bones referable to 11 macromammals family (22 species, Fig. 3) have been recognized. Fossils have been collected in different field surveys with 30 years but only part of them have a clearly documented stratigraphical position.

Therefore a taphonomic analysis of the fossils as been carried on to better define the fossiliferous content of the different layers and two distinct complexes can be identified. In the lower complex (B and C) more than the 50% of the remains have been collected, in many cases articulated in anatomical connection. The fossils from the upper complex (D and E) have been found in chaotic accumulations. Among mammals, the percentage of herbivores and carnivores taxa changes in different the layers as can be seen in Fig. 4. The graph of the species diversity shows the variation of the herbivores/carnivores ratio in the different layers, with a peculiar abundance of carnivores in the lower complex.



The area where Ingarano is located was characterized by a high environmental heterogeneity rate (from grassland to rocky environments). This wide range of species on the site can be explained on the one hand by the seasonal migrations of animals in different environmental patches and, for the lower complex, with the occurrence of a "natural trap".



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